Description

This document shows basic guidelines to use the Qorvo's Graphic User Interface software (GUI) to control the ACT85610 EVK or socketed board from a Windows-based PC with a Qorvo's USB-to-I^{2}C dongle.

GUI Setup

Install the Qorvo's USB-to-I^{2}C dongle driver by following the guide on "Qorvo GUI and Dongle Driver Installation.pdf" file. Plug the Qorvo's USB-to-I^{2}C dongle into PC's USB port and I^{2}C terminal to I^{2}C connector on ACT85610 EVK or Socketed board. Power up the EVK or Socketed board with an appropriate voltage, make sure the DUT started up properly.

In the GUI folder, open the "ACT85610 GUI Rev 1.5.exe" to invoke the software. Below screen would show up, make sure the USB-to-I^{2}C dongle is recognized by PC with status as below RED circle in **Figure 1** below.
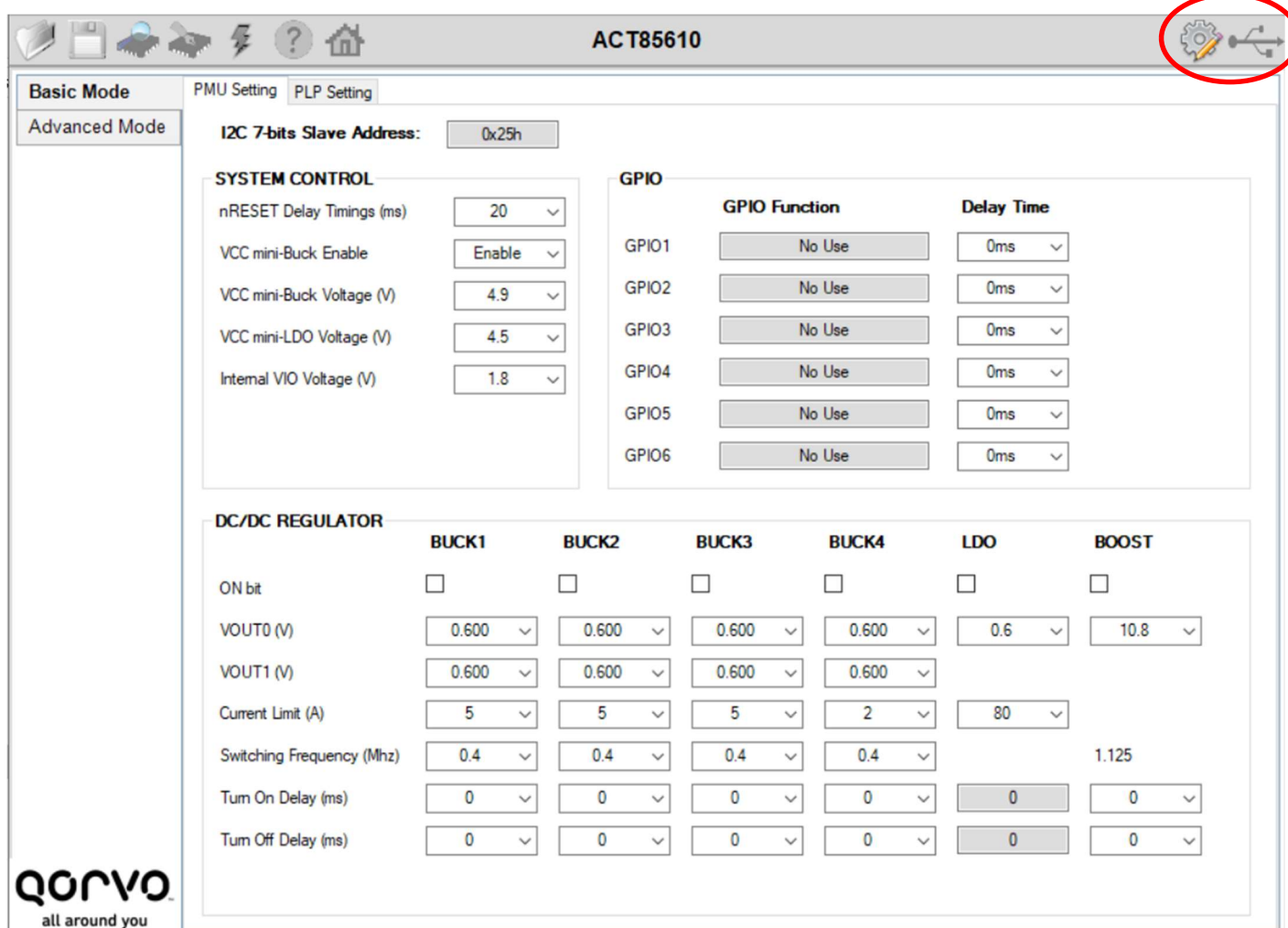

Figure 1: ACT85610 GUI

Operating Functions

The GUI has 6 functional buttons display as icons on top left corner, with order from left to right: Load, Save, Read, Write and EVK_Program as below **Figure 2**.

Figure 2: Functional Buttons

Open Function

Open function allows user to open an ACT85610's register information data .iact or .xml files. The file should be provided by Qorvo.

Save Function

Save function allows user can save the ACT85610 register information to an .iact or .xml file. Qorvo recommends user to save the registers read back to an .iact file.

Read Function

Read function allows user to read all the I^{2}C registers of the ACT85610 under test (DUT) and update to the GUI. Qorvo recommend user always click "Read" after powering up the EVK or socket board.

Write Function

Write function will write all the setting on the GUI to a powered DUT. After changing value on the GUI, click "Write" button to transfer all setting to the IC via I^{2}C.

Read/Write Single Register

In Advanced mode, beside the "Write" button to write all I^{2}C registers, ACT85610 GUI also supports write or read a single register. **Figure 5** in page 5 demonstrates how to read or write to only one register, in this particular case is register 0x45. User point the mouse to the bit and right-click, a small "Read/Write" pop-up window will appear. User select "Read" to read only this register or select "Write" to write the value of this register to the IC.

EVK_Program Function

EVK_Program function allows user to re-program the ACT85610 IC's NVM registers mounting on an EVK board. For programming an EVK, beside the main power supply needed to power up the ACT85610 EVK, user need to prepare an extra power supply capable of providing adjustable output voltage up to 7V/500mA.

Caution prior to programming procedure:

- During the programming procedure, VBUS will be raised to approximately 10V, VCC will be raised to approximately 7V. Therefore, to avoid possible damage to the system, please disconnect all connected circuits or parts that are not designed to withstand these voltages.
- Short VIN to GND before the procedure.

This function is a separated procedure, in order to successfully program the IC, users need to follow below steps:

- From unpowered IC, power up VCC to 3.3V with one power supply, then power up VBUS to 3.3V with another power supply.
- Read back, configure and write all the required changes to the registers. Then click the Program button
- Do all the subsequent steps according to the instructions provided by the pop-up messages.

After completion, turn off all power supplies, then power up the IC as in normal operation mode to confirm the changes.

Note: If USB cable or any power supply is interrupt during programming accidently, we recommend user to scrap the IC and replaced with a new Qorvo provided one.

Basic Mode

The GUI will startup in Basic Mode screen. In Basic Mode, user can easily change the register setting using options in drop-boxes or check/uncheck checkboxes. For checkboxes, Left click to check or uncheck checkboxes. For drop-boxes, Left-click to the small arrow next to the value then a selection popup will show up to

display all possible option to choose from. User may need to scroll up/down to find the target value and left click to select it. There are 2 tabs corresponding with PMU and PLP functions of the IC.

Example in **Figure 3** below, user click in to drop-box arrow to select the option as below to choose different VIN OV Threshold voltage.
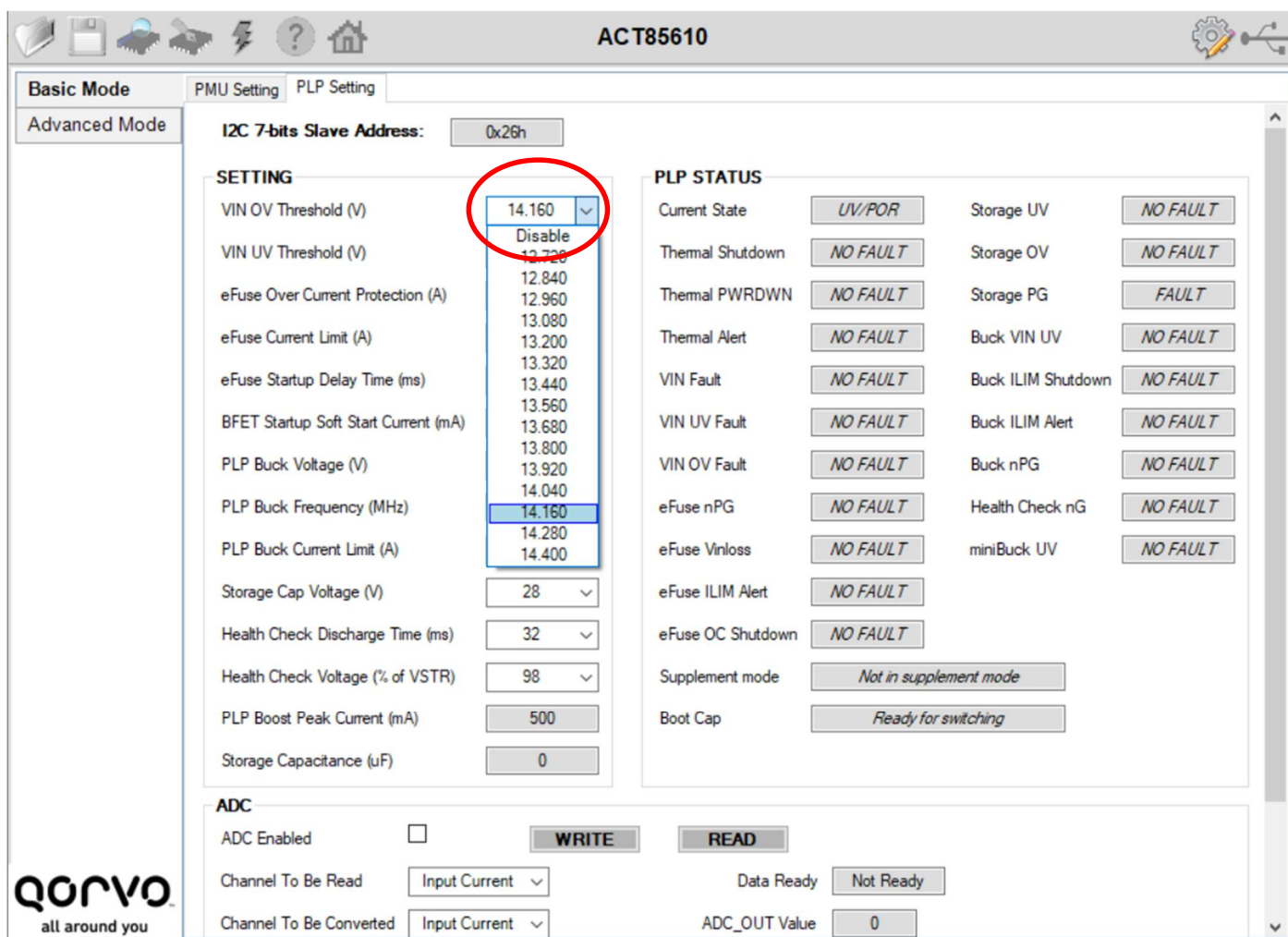

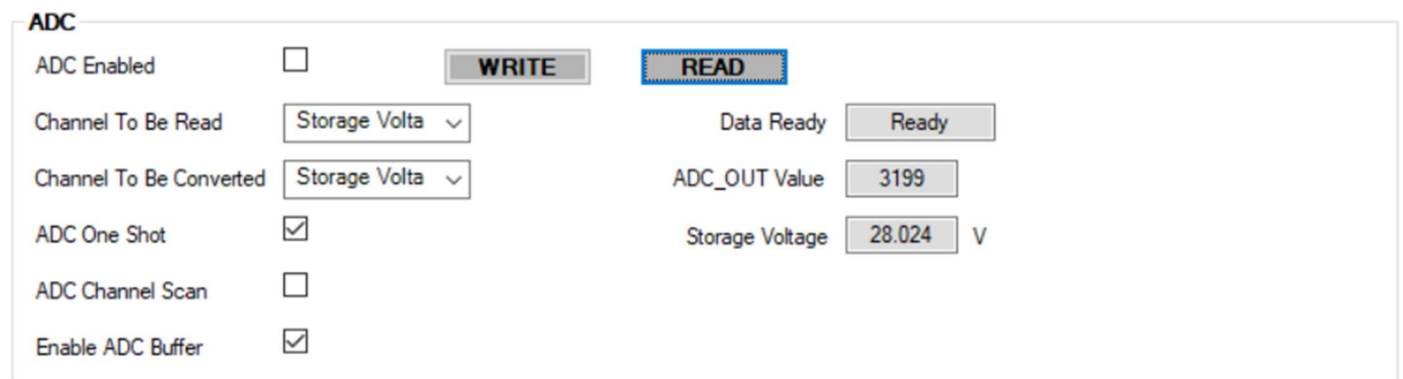**Figure 3: ACT85610 GUI Basic Mode**

ADC Function

There is an ADC function in the PLP tab as shown in **Figure 4** below.

There are two options: one shot conversion and auto scanning conversion, which can be selected by ticking in ADC One Shot or ADC Channel Scan boxes. Enable ADC Buffer should always be checked. The drop-down menus allow users to select the channel to convert and the channel to read. Click Write to write to I2C registers and click Read to show the results. Make sure the ADC Enabled checkbox is checked. For ADC one shot reading, the ADC Enabled parameter resets to Disable after one reading, remember to enable it again before processing another reading. In the example shown in Figure 4, the user selects to read a one-shot ADC of the Storage Voltage.

For ADC one shot reading, Channel to be read and Channel to be converted should be the same, while in ADC scan mode, all channel is converted, hence the channel to be converted is not taken into account. Note that before reading a new parameter, it is required to click Write and Read buttons again for correct results, changing configuration without write and read may result in incorrect values in the result box. The ADC Channel Scan function is designed for more complex data processing application, for simple reading of parameters, it is recommended to use ADC One Shot function. Please refer to ADC function description in the datasheet for more information.

Figure 4: ADC Function

Advanced Mode

User can access to all I²C register in bit level by selecting the "Advanced Mode" tab. In Advanced Mode screen, registers are divided into tile-based groups. To change the registers, user select the corresponding tile then left click on the "bit name"

button to flip the bit value between "0" and "1". Refer to the ACT85610 datasheet for functionality of each bit. User is required to have fully understanding of each bit/register function.

Example in **Figure 5** below, user selects "Advance Mode", "Buck1", before right-clicking to write or read 0x45 register.
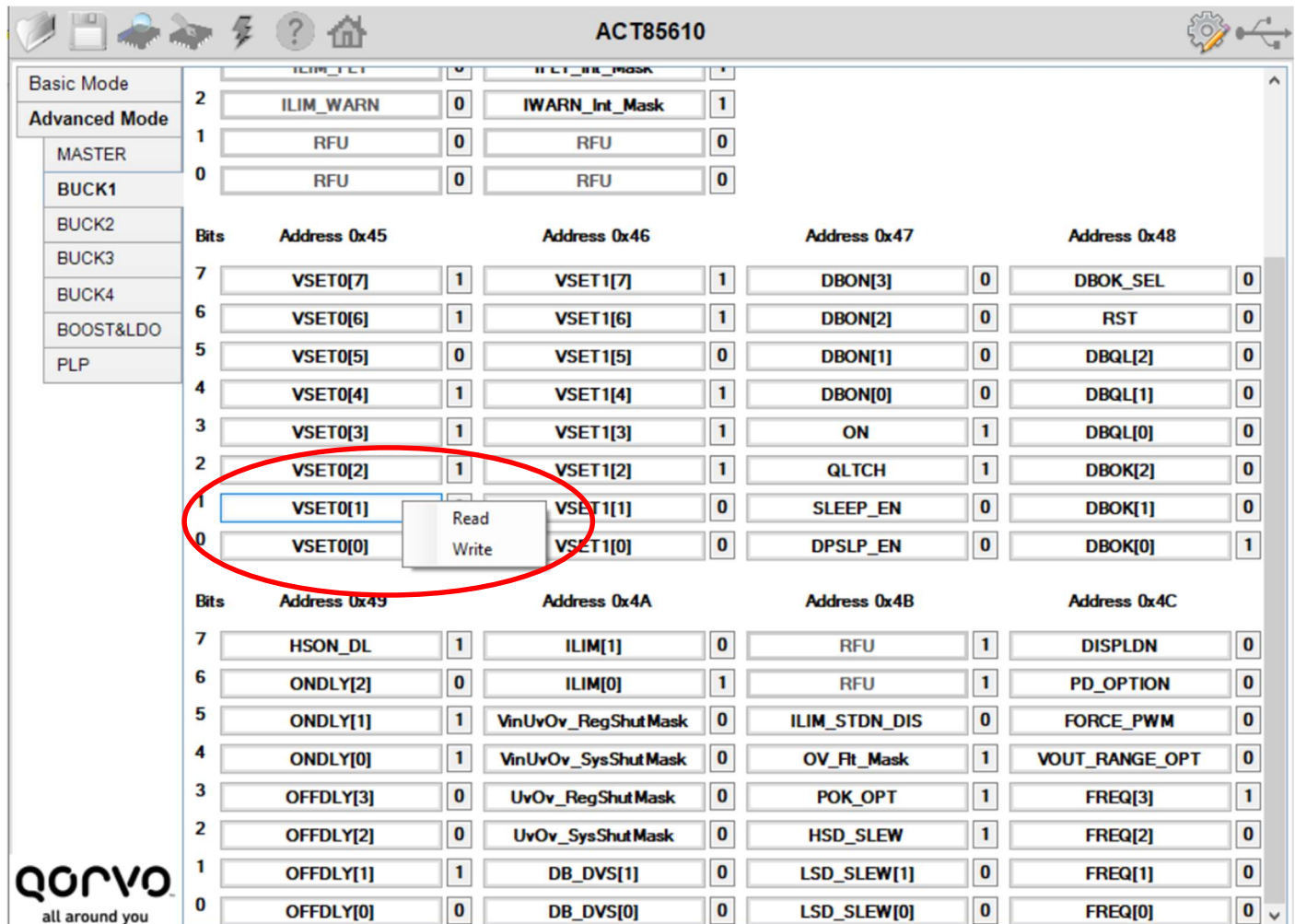

Figure 5: ACT85610 GUI in Advanced Mode

REVISION HISTORY

REVISION	DATE	DESCRIPTION
0.1	18 MAR 2019	INITIATION
1.0	05 NOV 2019	UPDATED PROGRAMMING FUNCTION
1.1	08 JAN 2020	Remove "Proprietary"
1.2	17 FEB 2020	Improve program stability
1.3	06 MAR 2020	Correct ADC Error
1.4	25 MAR 2020	Update register name
1.5	07 APR 2020	Fix the error clear status bits in register 0x00 after read all.

Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations:
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